

In the Specification:

Please replace the paragraph beginning at page 23, line 1, with the following:

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--Examples of pan DR binding peptides of the invention that can induce or enhance a T-helper cell mediated immune response include, for example, the first 8 peptides listed in Table 9. This Table provides an illustration of various substitutions that one can make to obtain different pan DR stimulatory peptides. For example, the peptide 965.10 is a synthetic peptide, having a non-naturally occurring cyclohexylalanine or similar amino acid peptide at position X₂ and being flanked on each end by D-amino acids. An analogous preferred peptide has a substitution, *e.g.*, phenylalanine, at position X₂ of peptide 965.10. To obtain an all-natural yet analogous peptide, the D-amino acids at each end can be replaced by L-amino acids in addition to the substitution of a naturally occurring amino acid for the cyclohexylalanine; an all-L-amino acid peptide such as this can be prepared and/or administered using nucleic acids that encode the peptide. Each of these three peptides can then be subjected to an additional substitution at position X₆, as illustrated in Table 5. For example, the tryptophan at position X₆ of peptide 965.10 or its two derivatives can be replaced by asparagine, tyrosine, lysine, histidine, or alanine without loss of stimulatory activity. Thus, preferred peptides include those shown in Table 5.

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Table 5

Amino acid at Position X ₆	Synthetic	Replacement of Cyclohexylalanine	All-Natural (no D-amino acids or cyclohexylalanine)
W	aK(X)VAAWTLKAAa	aKFVAAWTLKAAa	AKFVAAWTLKAAA (SEQ ID NO:11)
N	aK(X)VAANTLKAAa	aKFVAANTLKAAa	AKFVAANTLKAAA (SEQ ID NO:12)
Y	aK(X)VAAYTLKAAa	aKFVAAAYTLKAAa	AKFVAAAYTLKAAA (SEQ ID NO:13)
K	aK(X)VAAKTLKAAa	aKFVAAKTLKAAa	AKFVAAKTLKAAA (SEQ ID NO:14)
H	aK(X)VAAHTLKAAa	aKFVAAHTLKAAa	AKFVAAHTLKAAA (SEQ ID NO:15)
A	aK(X)VAAATLKAAa	aKFVAAATLKAAa	AKFVAAATLKAAA (SEQ ID NO:16)

Please replace the paragraph beginning at page 41, line 14, with the following:

--Peptides encompassing B-cell epitopes from the central immunodominant circumsporozoite repeat region of circumsporozoite proteins (CSP) of *P. yoelii* (PyB) or *P. falciparum* (PfB) were synthesized by standard MOC chemistry, purified by HPLC and their purity and identity verified by HPLC and mass spectrometry. Sequences: PyB = G(QGPGAP)₄ (SEQ ID NO:17) (Charoenvit, Y. *et al.*, *J. Immunol.* **146**:1020-5 (1991)); PfB = (NANP)₄ (SEQ ID NO:18) (Nussenzweig, V. *et al.*, *Adv Immunol* **45**:283-334 (1989); Dame, J.B. *et al.*, *Science* **225**:593-9 (1984)). Peptides colinearly synthesized to encompass PADRE were also produced using the same methods. PADRE-PfB sequence: aKXVAAWTLKAA(NANP)₄GGS; PADRE-PyB sequence: aKXVAAWTLKAA(QGPGAP)₄GGS.--

Please replace the paragraph beginning at page 41, line 25, with the following:

--A multiple antigen peptide (PyCSP-MAP) was also synthesized as previously described (Wang, R. *et al.*, *J. Immunol* **154**:2784-93 (1995); Valmori, D. *et al.*, *J Immunol Meth* **149**:717-21 (1992)). In brief, it included a lysine core and four

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branches. Each branch included four copies of the protective B-cell epitope, QGPGAP (SEQ ID NO:19), from the PyCSP and the universal T-helper epitopes from tetanus toxin, p2p30 (p2 = QYIKANSKFIGITE (SEQ ID NO:5); p30 = FNNFTVSFWLRVPKVSASHLE (SEQ ID NO:20)) (Wang, R. *et al.*, *J. Immunol* **154**:2784-93 (1995)).--

Please replace the paragraph beginning at page 46, line 7, with the following:

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--Encouraged by the data from the experiments shown above, we determined next if immunization with the PADRE-PyB peptide would protect mice against sporozoite challenge. In order to select a control immunogen we relied on the following information. We have previously reported that immunization with a multiple antigen peptide branched chain polymer including the 35 amino acid P2P30 universal T-cell epitope sequences from tetanus toxin, and four copies of the six amino acid tandem repeat (QGPGAP; SEQ ID NO:19) from the *P. yoelii* circumsporozoite protein (PyCSP) in multiple adjuvants induces high levels of antibodies that inhibit sporozoite invasion of hepatocytes *in vitro* and protect against sporozoite challenge *in vivo* (Wang, R. *et al.*, *J. Immunol* **154**:2784-93 (1995)). We have also determined that doses of 25 µg of this PyCSP MAP induce higher levels of protection than do higher doses. Accordingly, this immunogen was used as a positive control in our experiments.--

Please replace the paragraph (Table 8) beginning at page 48, line 3, with the following:

--Table 8

Antibodies and protective immunity after immunization
of mice with PyCSP synthetic peptide vaccines

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Immunogen/ Adjuvant	Infected/ challenged	% Protected	IFAT Sporozoites (titer ^a x 10 ⁻³)	ELISA (QGPGAP) ₂ ^c PyCS.1 (OD Units x 10 ⁻³) ^b	
PyB/Titermax™	7/8	12.5	-	-	-
PADRE-PyB/ Titermax™	2/8	75.0	3.2	25.6	25.6
PyCSP-MAP/ Titermax™	2/7	71.4	3.2	12.8	12.8
-/ Titermax™	7/8	12.5	-	-	-
Infectivity control	8/8	0	ND	ND	ND

^aTiter is defined as the reciprocal of the last serum dilution yielding positive reactivity as detected by fluorescence microscopy. ^bThe reciprocal of the serum dilution at which the optical density (410 nm) was 1.0. ^c(QGPGAP)₂ = SEQ ID NO:21

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Please replace the paragraph (Table 9) beginning at page 50, line 1, with the following
(see attached sheet).

Please insert the accompanying paper copy of the Sequence Listing, page numbers 1 to 8,
at the end of the application.

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Table 9
Binding Activity of PADRE Analogs

PEPTIDE	SEQ ID NO.	SEQUENCE	DR1	DR2wB2	DR3	DR4w4	DR4w14	DR5	DR7	DRw53	DQ3.1
965.08	-	aK(X)VAAANTLKAaa-NH ₂	1.2 (1)	3.8	250	3	13.8	8	192.3	163.8	--
965.09	-	aK(X)VAAAYTLKAAa-NH ₂	0.8	7.4	250	1	7	5.4	192.3	86.4	--
965.10	-	aK(X)VAAAWTLKAAa-NH ₂	1.2	5.6	119	2.8	9.8	11.1	147.1	141.8	25
965.14	-	aK(X)VAAKTLKAAa-NH ₂	3.6	8	781	7.4	62.5	3.4	227	52.8	--
965.15	-	aK(X)VAAHTLKAAa-NH ₂	1.9	5.4	1389	3.2	13.8	29.9	156.3	79.2	--
965.16	-	aK(X)VAAATLKAAa-NH ₂	4.2	6.1	1471	6.2	55.6	16.7	227	131.9	--
965.17	22	AK(X)VAAAWTLKAAA-NH ₂	2	5.9	1786	3.8	26.7	9.1	147.1	169.6	--
553.01	5	QYIKANSKFIGITE	51.5	20	2717	8036	10000	20	25	--	--
553.02	-	qYIKANSKFIGITEa	238	25.3	-- (2)	--	--	83.3	49	--	--

(1) = nM IC₅₀ values

(2) dashes indicate >10,000 nM

(X) = cyclohexylalanine

“-NH₂” indicates amidation at the carboxyl terminus of the peptides.